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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/532,904	04/27/2005	Peter-Andre Redert	NL 021087	3107

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PHILIPS INTELLECTUAL PROPERTY & STANDARDS

P.O. BOX 3001

BRIARCLIFF MANOR, NY 10510

EXAMINER
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LA BARR, EDWARD T

ART UNIT	PAPER NUMBER
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.2628

MAIL DATE	DELIVERY MODE
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10/17/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/532,904	Applicant(s) REDERT ET AL.	
	Examiner Edward T. La Barr	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |  |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>4/27/2005</u> | 6) <input type="checkbox"/> Other: ____  |

**DETAILED ACTION**

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

***Priority***

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

The information disclosure statement (IDS) submitted on 4/27/2005 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### *Specification*

The abstract of the disclosure is objected to because the phrase "The invention provides" can be implied. Correction is required. See MPEP § 608.01(b).

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

Applicant is reminded of the proper content of an abstract of the disclosure.

A patent abstract is a concise statement of the technical disclosure of the patent and should include that which is new in the art to which the invention pertains. If the patent is of a basic nature, the entire technical disclosure may be new in the art, and the abstract should be directed to the entire disclosure. If the patent is in the nature of an improvement in an old apparatus, process, product, or composition, the abstract should include the technical disclosure of the improvement. In certain patents, particularly those for compounds and compositions, wherein the process for making and/or the use thereof are not obvious, the abstract should set forth a process for making and/or use thereof. If the new technical disclosure involves modifications or alternatives, the abstract should mention by way of example the preferred modification or alternative.

The abstract should not refer to purported merits or speculative applications of the invention and should not compare the invention with the prior art.

Where applicable, the abstract should include the following:

- (1) if a machine or apparatus, its organization and operation;
- (2) if an article, its method of making;
- (3) if a chemical compound, its identity and use;
- (4) if a mixture, its ingredients;
- (5) if a process, the steps.

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Extensive mechanical and design details of apparatus should not be given.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) THE NAMES OF THE PARTIES TO A JOINT RESEARCH AGREEMENT.
- (e) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC.
- (f) BACKGROUND OF THE INVENTION.
  - (1) Field of the Invention.
  - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (g) BRIEF SUMMARY OF THE INVENTION.
- (h) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (i) DETAILED DESCRIPTION OF THE INVENTION.
- (j) CLAIM OR CLAIMS (commencing on a separate sheet).
- (k) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
- (l) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

### **Content of Specification**

- (a) Title of the Invention: See 37 CFR 1.72(a) and MPEP § 606. The title of the invention should be placed at the top of the first page of the specification unless the title is provided in an application data sheet. The title of the invention should be brief but technically accurate and descriptive, preferably from two to seven words may not contain more than 500 characters.

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- (b) Cross-References to Related Applications: See 37 CFR 1.78 and MPEP § 201.11.
- (c) Statement Regarding Federally Sponsored Research and Development: See MPEP § 310.
- (d) The Names Of The Parties To A Joint Research Agreement: See 37 CFR 1.71(g).
- (e) Incorporation-By-Reference Of Material Submitted On a Compact Disc: The specification is required to include an incorporation-by-reference of electronic documents that are to become part of the permanent United States Patent and Trademark Office records in the file of a patent application. See 37 CFR 1.52(e) and MPEP § 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text were permitted as electronic documents on compact discs beginning on September 8, 2000.
- (f) Background of the Invention: See MPEP § 608.01(c). The specification should set forth the Background of the Invention in two parts:
  - (1) Field of the Invention: A statement of the field of art to which the invention pertains. This statement may include a paraphrasing of the applicable U.S. patent classification definitions of the subject matter of the claimed invention. This item may also be titled "Technical Field."
  - (2) Description of the Related Art including information disclosed under 37 CFR 1.97 and 37 CFR 1.98: A description of the related art known to the applicant and including, if applicable, references to specific related art and problems involved in the prior art which are solved by the applicant's invention. This item may also be titled "Background Art."
- (g) Brief Summary of the Invention: See MPEP § 608.01(d). A brief summary or general statement of the invention as set forth in 37 CFR 1.73. The summary is separate and distinct from the abstract and is directed toward the invention rather than the disclosure as a whole. The summary may point out the advantages of the invention or how it solves problems previously existent in the prior art (and preferably indicated in the Background of the Invention). In chemical cases it should point out in general terms the utility of the invention. If possible, the nature and gist of the invention or the inventive concept should be set forth. Objects of the invention should be treated briefly and only to the extent that they contribute to an understanding of the invention.

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- (h) Brief Description of the Several Views of the Drawing(s): See MPEP § 608.01(f). A reference to and brief description of the drawing(s) as set forth in 37 CFR 1.74.
- (i) Detailed Description of the Invention: See MPEP § 608.01(g). A description of the preferred embodiment(s) of the invention as required in 37 CFR 1.71. The description should be as short and specific as is necessary to describe the invention adequately and accurately. Where elements or groups of elements, compounds, and processes, which are conventional and generally widely known in the field of the invention described and their exact nature or type is not necessary for an understanding and use of the invention by a person skilled in the art, they should not be described in detail. However, where particularly complicated subject matter is involved or where the elements, compounds, or processes may not be commonly or widely known in the field, the specification should refer to another patent or readily available publication which adequately describes the subject matter.
- (j) Claim or Claims: See 37 CFR 1.75 and MPEP § 608.01(m). The claim or claims must commence on separate sheet or electronic page (37 CFR 1.52(b)(3)). Where a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation. There may be plural indentations to further segregate subcombinations or related steps. See 37 CFR 1.75 and MPEP § 608.01(i)-(p).
- (k) Abstract of the Disclosure: See MPEP § 608.01(f). A brief narrative of the disclosure as a whole in a single paragraph of 150 words or less commencing on a separate sheet following the claims. In an international application which has entered the national stage (37 CFR 1.491(b)), the applicant need not submit an abstract commencing on a separate sheet if an abstract was published with the international application under PCT Article 21. The abstract that appears on the cover page of the pamphlet published by the International Bureau (IB) of the World Intellectual Property Organization (WIPO) is the abstract that will be used by the USPTO. See MPEP § 1893.03(e).
- (l) Sequence Listing. See 37 CFR 1.821-1.825 and MPEP §§ 2421-2431. The requirement for a sequence listing applies to all sequences disclosed in a given application, whether the sequences are claimed or not. See MPEP § 2421.02.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

**Claims 4, 9, 14 and 15** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

***Regarding Claim 4:***

Applicant claims: "Method according to claim 1, characterized in that the contribution of light of a 3-D pixel to a certain 3-D scene point is made previous to the provision of said 3-D scene points to said 3-D pixels."

As claimed, the said 3-D pixel would project light contributing to said 3-D scene point before any information that could cause the 3-D pixel to operate in this way is provided to the 3-D pixel. The Examiner finds that as written the claimed invention could not function and that Claim 4 is indefinite for that reason. The Examiner suggests that modification of the claim to specify "... calculation of the contribution of light ..." or the like might result in a working invention consistent with the Specification.

The Examiner assumes that a concordant reading of the claim was intended for purposes of examination on the merits.

***Regarding Claim 9:***

Applicant claims: "Method according to claim 1, characterized in that said 2-D pixels of a 3-D display plane transmit and/or emit light only within one plane"



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No claim from which Claim 9 depends discloses a 2-D pixel. The Examiner suggests that modification of the claim to specify "... ~~said~~ 2-D pixels ..." might result in a workable claim in view of the specification.

The Examiner assumes that a concordant reading of the claim was intended for purposes of examination on the merits.

***Regarding Claim 14:***

Applicant claims: "3-D display device according to claim 11, characterized in that said 3-D pixels comprise a point light source, providing said 2-D pixel with light."

No claim from which Claim 14 depends discloses a 2-D pixel. The Examiner suggests that modification of the claim to specify "... ~~2-D~~ 3-D pixel ..." might result in a workable claim in view of the specification.

The Examiner assumes that a concordant reading of the claim was intended for purposes of examination on the merits.

***Regarding Claim 15:***

Applicant claims: "3-D display device according to claim 11, characterized in that said 3-D pixels comprise registers for storing a value determining which ones of said 2-D pixels within said 3-D pixel contribute light to a 3-D scene point."

No claim from which Claim 15 depends discloses a 2-D pixel. The Examiner suggests that modification of the claim to specify "... ~~2-D~~ 3-D pixel ..." might result in a workable claim in view of the specification.

The Examiner assumes that a concordant reading of the claim was intended for purposes of examination on the merits.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**Claims 1, 2, 4, 5 and 6 - 10** are rejected under 35 U.S.C. 102(e) as being anticipated by Gelsey (US Pat. No. 6,344,837).

***Regarding Claim 1:***

Gelsey discloses a method for visualisation of a 3-dimensional (3-D) scene model of a 3-D image, with

a 3-D display plane (See e.g. Fig 3 block 10 and Fig. 4A) comprising 3-D pixels (See e.g. Abstract “DMP”) by

emitting and/or transmitting light into certain directions by said 3-D pixels, thus visualising 3-D scene points (See e.g. Fig. 3), characterized in that said

3-D scene model (See e.g. col. 9 lines 4-5) is converted into a plurality of 3-D scene points (See e.g. col. 9 lines 4-10 where the 3-D scene point is the point where R intercepts S. See also e.g. Figs 1, 2 and 3), said

3-D scene points are fed at least partially to at least one of said 3-D pixels (See e.g. col. 9 lines 25-29, where SP = scene point, and DMP = 3-D pixel), said

at least one 3-D pixel calculates its contribution to the visualisation of a 3-D scene point (Applicant defines 3-D pixel as “may be a device comprising a spatial light

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modulator ... may contain light sources, lenses, spatial light modulators and a control unit” at Application Specification p.2 lines 18-21. In this view, See e.g. Gelsey Claims 32 “control mechanism” and col. 9 lines 25-29 as above).

***Regarding Claim 2:***

Gelsey discloses a method according to claim 1, characterized in that light is emitted and/or transmitted by 2-D pixels comprised within said 3-D pixels, each 2-D pixel directing light into a different direction contributing light to a scene point of said 3-D scene model (Applicant defines 2-D pixel as “may be a device that can modulate the emission or transmission of light” at Application Specification p. 2 lines 17-18. In this view, See e.g. Gelsey col. 4 line 54 through col. 5 line 8 especially “centrally located point source of light within ... modulation regions” and “light emitted in different directions having the different visual properties appropriate for the scene being displayed.”)

***Regarding Claim 4:***

Gelsey discloses a method according to claim 1, characterized in that the contribution of light of a 3-D pixel to a certain 3-D scene point is made previous to the provision of said 3-D scene points to said 3-D pixels (See e.g. col. 10 lines 1-11. See also Fig. 14, where scene point SP is set equal to Intercept (R,S) in block 72, followed by provision of the scene points to the 3-D pixel in block 74 by setting the modulation region to match SP).

***Regarding Claim 5:***

Gelsey discloses a method according to claim 1, characterized in that the contribution of light of a 3-D pixel to a certain 3-D scene point is calculated within one 3-D pixel of one row or of one column previous to the provision of said 3-D scene points to the remaining 3-D pixels of a row or a column, respectively. (See e.g. col. 10 lines 1-11. See also Fig. 14, where scene point SP is set equal to Intercept (R,S) in block 72, followed by provision of the scene points to the 3-D pixel in block 74 by setting the modulation region to match SP).

***Regarding Claim 6:***

Gelsey discloses a method according to claim 1, characterized in that a 3-D pixel outputs an input 3-D scene point to at least one neighboring 3-D pixel (See e.g. col. 9 lines 14-35 where neighboring 3-D pixel is line 17 "... next DMP ..." and 3-D scene point is SP).

***Regarding Claim 7:***

Gelsey discloses a method according to claim 1, characterized in that each 3-D pixel alters the co-ordinates of a 3-D scene point prior to putting out said 3-D scene point to at least one neighbouring 3-D pixel (See e.g. col. 9 lines 4-35, where the scene point SP is defined as the point intercept (R,S) in Step 72. In this view See Fig. 13 where the

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coordinate of the scene point depends therefore on R, this step occurring prior to decision 78 which passes the data to the next 3-D pixel).

***Regarding Claim 8:***

Gelsey discloses a method according to claim 1, characterized in that in case more than one 3-D scene point needs the contribution of light from one 3-D pixel, the depth information of said 3-D scene point is decisive (See e.g. col. 4 lines 49-53 where occlusion depends on viewing direction.)

***Regarding Claim 9:***

Gelsey discloses a method according to claim 1, characterized in that said 2-D pixels of a 3-D display plane transmit and/or emit light only within one plane (See e.g. col. 6 lines 1-24, esp. 18-19).

***Regarding Claim 10:***

Gelsey discloses a method according to claim 1, characterized in that colour is incorporated by spatial or temporal multiplexing within each 3-D pixel (See e.g. col. 5 lines 8-24 and Fig. 5. See also col. 5 lines 55-65).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 3 and 11-15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Gelsey (US Pat. No. 6,344,837) as applied to Claims 1, 2, 4, 5 and 6 - 10 above, in view of Norman (US Pat. No. 6,154,855).

***Regarding Claim 3:***

Gelsey does not explicitly disclose the method according to claim 1, characterized in that said 3-D scene points are provided sequentially, or in parallel, to said 3-D pixels. However, Norman teaches the use of arrays of processors (See e.g. Norman col. 2 lines 30-45, col. 7 lines 38-46 and col. 9 lines 13-21).

It would have been obvious to persons having ordinary skill in the art at the time of invention to provide 3-D scene points to 3-D pixels sequentially or in parallel. It was known that a highly parallel data processing system can have the advantage of overcoming the I/O and memory bottlenecks that plague parallel processors as well as the von Neumann bottleneck of single processor architectures (See e.g. Norman col. 9 lines 27-36).

***Regarding Claim 11:***

Gelsey discloses the following elements as developed in claim 1 above:

3-D display device, in particular for a method according to claim 1, comprising: a 3-D display plane with 3-D pixels, said 3-D pixels comprise 3-D pixel at least partially

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comprise a control unit for calculating their contribution to the visualisation of a 3-D scene point representing said 3-D scene.

Gelsey does not explicitly disclose, but Norman teaches an input port and an output port for receiving and putting out 3-D scene points of a 3-D scene (See e.g. Norman col. 32 lines 13-20 where “array cell” comprises a 3-D pixel).

It would have been obvious to persons having ordinary skill in the art at the time of invention to incorporate an input and an output port for receiving and putting out 3-D scene points of a 3-D scene. It was known that having cells equipped with direct input and direct output means allows the array to handle input intensive tasks without encountering an input bottleneck (See e.g. Norman col. 32 lines 22-25.)

***Regarding Claim 12:***

Gelsey does not explicitly disclose a 3-D display device according to claim 11, characterized in that said 3-D pixels are interconnected for parallel and serial transmission of 3-D scene points. However, Norman teaches the use of arrays of processors (See e.g. Norman col. 2 lines 30-45, col. 7 lines 38-46 and col. 9 lines 13-21).

It would have been obvious to persons having ordinary skill in the art at the time of invention to interconnect 3-D pixels for parallel and serial transmission of 3-D scene points. It was known that a highly parallel data processing system can have the advantage of overcoming the I/O and memory bottlenecks that plague parallel processors as well as the von Neumann bottleneck of single processor architectures (See e.g. Norman col. 9 lines 27-36).

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***Regarding Claim 13:***

Gelsey in view of Norman disclose a 3-D display device according to claim 11, characterized in that said 3-D pixels comprise a spatial light modulator with a matrix of 2-D pixels (See e.g. Gelsey Fig. 5.)

It would have been obvious to persons having ordinary skill in the art at the time of invention to utilize a 3-D pixel comprising a spatial light modulator and a matrix of 2-D pixels. It was known that using a matrix of 2-D pixels and a spatial light modulator can have the advantage of the pixels appearing to combine so that the single 3-D pixel may imitate several distinct 3-D pixels (See e.g. Gelsey col. 5 lines 8-24 where 3-D pixel is "DMP").

***Regarding Claim 14:***

Gelsey in view of Norman discloses a 3-D display device according to claim 11, characterized in that said 3-D pixels comprise a point light source, providing said 2-D pixel with light (See e.g. Gelsey col. 4 lines 54-55 and see generally Gelsey col. 4 line 54 through col. 5 line 54 and Fig. 4C).

It would have been obvious to persons having ordinary skill in the art at the time of invention to use a point light source to provide light. It was known that the light emitted from a point source through a Directionally Modulated Pixel can have the advantage of emitting nonuniform light in different directions appropriate for the scene being displayed (See e.g. Gelsey col. 4 line 54 through col. 5 line 8).



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***Regarding Claim 15:***

Gelsey does not explicitly disclose a 3-D display device according to claim 11, characterized in that said 3-D pixels comprise registers for storing a value determining which ones of said 2-D pixels within said 3-D pixel contribute light to a 3-D scene point. However, Norman teaches the use of arrays of processors where each processor has its own memory (See e.g. Norman Fig. 10 block 1016, See also col. 2 lines 30-34).

It would have been obvious to persons having ordinary skill in the art at the time of invention to incorporate registers for storing a value determining which pixels contribute light to a 3-D scene point. It was known that systems comprising arrays of processors where each processor has its own memory can have the advantage of removing the von Neumann uni-processor bottleneck and the multi-processor memory bottleneck for parallel applications (See e.g. Norman col. 2 lines 34-36).

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

2,777,011 Marks, Alvin M. teaches a three-dimensional display system;

5,214,419 DeMond et al. teach a planarized true three-dimensional display involving a spatial light modulator;

5,309,550 Takahashi, Kazushige teaches a three dimensional display Z-buffer unit;

5,493,427 Nomura et al. teach a variable lens three-dimensional display;

5,748,872 Norman, Richard S. teaches fault-tolerant massively parallel processing arrays;

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5,861,931 Gillian et al. teach three-dimensional display light sources and polar manipulator;

5,982,342 Iwata et al. teach a three-dimensional parallax image generator;

6,212,007 Hentschke, Siegbert teaches a three-dimensional display involving cylindrical lenses and grids;

6,285,317 Ong, Ping-Wen teaches a scene generator for three-dimensional display;

6,304,263 Chiabrera et al. teach three-dimensional pixels;

2001/0045979 Matsumoto et al. teach scene-points;

6,363,170 Seitz et al. teach three-dimensional scene reconstruction involving voxel coloring;

2002/0135673 Favalora et al. teach three-dimensional display system methodology;

6,479,929 Knabenbauer, Daniel J. teaches three-dimensional input image coding;

2002/0190921 Hilton, Ken teaches column and plane data addressing in a three-dimensional display;

2002/0190922 Tsao, Che-Chih teaches a spatial light modulator;

2003/0103062 Lee et al. teach three-dimensional display graphics engine operations;

2003/0103047 Chiabrera et al. teach three-dimensional display methodology;

6,690,384 Chiu et al. teach three-dimensional display rendering control.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward T. La Barr whose telephone number is (571) 270-3237. The examiner can normally be reached on Monday-Friday, 9:00 a.m - 5:00 p.m., Eastern Time.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao M. Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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ETL

  
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